Appendix 5.12-C

FAA Determinations

U.S. Department
of Transportation
**Federal Aviation
Administration**

Air Traffic Division
New England Region

12 New England Executive Park
Burlington, MA 01803-5299

RECEIVED
APR 15 2002

APR 12 2002

Ms. Karen Kirk Adams
Chief, Permits & Enforcement Branch
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Adams:

The purpose of this letter is to provide you with additional information on the Federal Aviation Administration's (FAA) authority and process regarding the construction and/or alteration of structures in the navigable airspace of the United States. You requested documentation for your records to further assist you in the preparation of the Cape Wind Energy Project, Environmental Impact Statement (EIS).

The FAA's authority to promote the safe and efficient use of the navigable airspace, whether concerning existing or proposed structures, is predominantly derived from 49 United States Code, Section 44718. Title 14, Code of Federal Regulations, Part 77, Objects Affecting Navigable Airspace, was adopted to establish notice criteria for proposed construction or alteration that would protect aircraft from encountering unexpected structures. The regulations apply to structures located within any state, territory, or possession of the United States, within the District of Columbia, or within territorial waters (12 NM) surrounding such states, territories, or possessions. The primary objective of an evaluation under Part 77 is to ensure the safety of air navigation and efficient utilization of navigable airspace by aircraft.

The sponsor has the responsibility to notify the FAA of proposed construction of any structure with a height greater then 200 feet above ground (in this case above sea level) that may effect the protected areas/airspace around airports, commonly referred to as Part 77 surfaces. This notification is accomplished by the submission of an FAA Form 7460-1, Notice of Proposed Construction or Alteration. The form, along with the appropriate guidelines, can be obtained on the internet at this address: www.faa.gov/ATS/ATA/ATA400/OEAAA.CFM or by contacting this office at (781) 238-7520. One 7460-1 will be required for each wind turbine. This form requires information that includes the latitude and longitude, as well as the height of the structure. Additionally, the location of the turbine(s) will need to be plotted on a 7.5 minute U.S.G.S. topographic map.

Upon receipt, the Air Traffic Division reviews the Form 7460-1 for completeness. If incomplete, the submission is returned to the sponsor for corrections. If complete, it is entered into an automated Obstruction Evaluation Program

An Obstruction Evaluation specialist will again verify the accuracy of the information. An acknowledgement notice is then sent to the sponsor advising that the aeronautical study has been initiated, and identifies the aeronautical study number assigned to that case. At the same time, automatic distribution is made to the other FAA Divisions/offices for an in-house aeronautical study. These offices include Airway Facilities, Frequency Management, Airports, Flight Procedures, Flight Standards, and Military Representatives. Below are some examples of the effect that the office or division evaluates:

1. On existing and proposed public-use and military airports and/or aeronautical facilities.

2. On existing and proposed visual flight rule (VFR)/instrument flight rule (IFR) aeronautical departure, arrival and en route operations, procedures, and minimum flight altitudes.

3. Regarding physical, electromagnetic, or line-of-sight interference on existing or proposed air navigation, communications, radar, and control systems facilities.

4. On airport capacity, as well as the cumulative impact resulting from the structure when combined with the impact of other existing or proposed structures.

5. Whether marking and/or lighting is necessary.

Upon completion of the in-house evaluations (usually within 60 days), the FAA will either issue a Determination of No Hazard (which is sent to the sponsor) or attempt negotiations with the sponsor to reduce the structure's height so that it does not exceed obstruction standards, mitigate any adverse effects on aeronautical operations, air navigation and/or communication facilities, or eliminate substantial adverse effect. If negotiations fail, the proposal is circularized for public comment. Public notices are distributed to, at a minimum, all known aviation interested parties, airport owners (all public-use airports within 13 nautical miles and all private-use airports within 5 nautical miles); the FAA approach facility, en route facility, and automated flight service station, the appropriate state aviation authority, and the town/city the structure is/will be constructed. The circularization process provides a 30-day window for comments. During the circularization process the FAA may attempt again to negotiate with the sponsor.

Comments received during the circularization process are evaluated and consolidated with in-house comments. Only valid aeronautical objections or comments will be considered. If the aeronautical study reveals substantial adverse effect (as defined in FAA Order 7400.2E, 6-3-5) (http://www.faa.gov/atpubs/AIR/Index.htm) a Determination of Hazard is issued. The sponsor can then petition FAA Headquarters for a review of the case and possible reversal of the Regional FAA Air Traffic Division Determination of Hazard.

For both a Determination of Hazard and Determination of No Hazard, notification is made to the same parties involved in the circularization process.

The entire evaluation process ranges from three to six months from the receipt of a complete and accurate 7460-1, depending on if circularization is required. Although the FAA Part 77 review is a stand-alone requirement/process from the Cape Wind Energy Project EIS, we would recommend that the Part 77 evaluation be complete for disclosure in the Draft EIS.

I hope this letter addresses your needs. As a cooperating federal agency, we look forward to our continuing commitment to assist you with aviation related matters for the Cape Wind Energy Project EIS. Please contact Ms. Terry Flieger at (781) 238-7524, if you have any further questions.

Sincerely,

Michael A. Baney
Acting Manager, Airspace Branch

Horseshoe Shoal
FAA Determination

Federal Aviation Administration
New England Regional Office
12 New England Executive Park-ANE-520
Burlington, MA 01803

AERONAUTICAL STUDY No
2002-ANE-982-OE
THROUGH
2002-ANE-1111-OE

Issued Date: 4/9/2003

LEONARD J. FAGAN
CAPE WIND ASSOCIATES, LLC
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02116

** DETERMINATION OF NO HAZARD TO AIR NAVIGATION **

The Federal Aviation Administration has completed an aeronautical study under the provisions of 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure Type:	Wind Turbine (A8)
Location:	NANTUCKET SOUND, MA
Latitude:	41-29-41.03 NAD83
Longitude:	70-23-3.33
Heights:	426 feet above ground level (AGL)
	426 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure should be marked and/or lighted in accordance with FAA Advisory Circular 70/7460-1 AC 70/7460-1K, Obstruction Marking and Lighting, AS PER ATTACHED.

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

See Attached At least 10 days prior to start of construction (7460-2, Part I)

See Attached Within 5 days after the construction reaches its greatest height (7460-2, Part II)

As a result of this structure being critical to flight safety, it is required that the FAA be kept appraised as to the status of the project. Failure to respond to periodic FAA inquiries could invalidate this determination.

See attachment for additional condition(s) or information.

This determination expires on 10/9/2004 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed , as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is subject to review if an interested party files a petition on or before 5/9/2003. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted in triplicate to the Manager, Airspace Branch, Federal Aviation Administration, Washington, D.C. 20591.

This determination becomes final on 5/19/2003 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (781)238-7520. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2002-ANE-982-OE.

(DNH)

David T. Bayley
Manager, Airspace Branch

Attachment(s)

7460-2 Attached

Determination of No Hazard
Aeronautical Study Number 2002-ANE-0982-OE

LOCATION:

The proposed Wind Turbine Generator Farm will be located on Horseshoe Shoals in Nantucket, MA, and is approximately 10.39 Nautical Miles (NM) southwest of the airport reference point of Barnstable Municipal (Hyannis) Airport (HYA), MA.

DESCRIPTION:

This proposed Wind Turbine Generator project is known as the Cape Winds Horseshoe Shoals Project. It is composed of 130 Wind Turbine Generators. The center of the project can be found at the approximate location of 41° 29' 57.29" North Latitude by 070° 19' 28.84" West Longitude (NAD83). This project is one of three alternative sites to be studied.

OBSTRUCTION STANDARDS EXCEEDED:

The aeronautical study indicates that the structures do not exceed the Obstruction Standards of Federal Aviation Regulations (FAR) Part 77.

OTHER AERONAUTICAL EFFECTS:

The preliminary aeronautical study indicates that no part of the windmill farm underlies a federal airway. The eastern half of the windmill farm lies in airspace which is designated as uncontrolled airspace below 1,200 feet AMSL. The western portion of the windmill farm underlies airspace designated as uncontrolled below 700 feet AMSL.

The New York Sectional Aeronautical Chart, 66th Edition, indicates the Maximum Elevation Figure (MEF) in the area is between 600 and 700 feet AMSL. This elevation is based on the highest known feature in the quadrants immediately to the north and south of the windmill farm.

PUBLIC NOTICE COMMENTS:

The aeronautical study was mailed out as a public notice on January 30, 2003, with a closing date of March 8, 2003. Six letters containing aeronautical comments were received during the public notice period.

The following is a summary of comments received:

- Towers may prove to be obstacles to VFR flight through the sound with flight visibility as low as 3 miles.
- The wind turbines may interfere with the non-precision approach (VOR Runway 24) at Martha's Vineyard.
- Pilots with faulty altimeters will not be able to maintain clearance.
- Pilots in certain weather conditions can fly close to the water legally without radio communications.

- When cloud ceilings are between 1200-1500, pilots would not be able to transit the area at 500-600 feet MSL.
- Aircraft circumnavigating the wind farm will crowd into the path of commercial traffic.
- Wind Turbines may be a possible electrical interference.
- Lighting will be a distraction.
- The proposed wind farm will have little to no impact on military flights on the 102nd Fighter Wing of the Massachusetts National Guard.

DISPOSITION OF COMMENTS:

- Federal Aviation Regulations (FAR) require pilots to remain 500 vertically and/or horizontally from any charted obstruction.
- None of the wind turbines interfere with any arrival, departure, or enroute IFR procedure at any airport.
- Pilots flying VFR only must maintain required obstruction clearance from all obstacles, as well as, terrain.
- VFR flight, throughout the sound, in accordance with FAR Part 91, will remain.
- The wind turbine farm is not located under any known direct route between HYA-MVY-ACK. It is located in the approximate middle of the triangle area. When ceilings are less than 500 feet above the windmills, pilots will be required to circumnavigate the area.
- IFR altitudes throughout the Nantucket Sound area begin at 1500 feet MSL.
- The FAA Airway Facilities division have analyzed the wind farm and are satisfied there will not be any interference from the wind turbine generators.
- Obstruction marking and lighting over water as on land can be used as a visual reference.

SUMMARY OF EFFECTS:

The aeronautical study found that the proposed Horseshoe Shoals Wind Turbine Generators would not have an adverse effect on air traffic operations enroute through the Nantucket Sound airspace under Visual Flight Rules (VFR) conditions.

The aeronautical study found that the proposed Horseshoe Shoals Wind Turbine Generators would not have an adverse effect on any air traffic operations outbound from any Nantucket Sound vicinity airport under VFR conditions.

The aeronautical study found that the proposed Horseshoe Shoals Wind Turbine Generators would not have an adverse effect on air traffic operations inbound to any Nantucket Sound vicinity airport under VFR conditions.

The aeronautical study found that the proposed Horseshoe Shoals Wind Turbine Generators would not have any adverse effect on air traffic operations inbound, outbound, or enroute through the Nantucket Sound airspace under Instrument Flight Rules (IFR) conditions.

The aeronautical study found that the Horseshoe Shoals Wind Turbine Generators would not have an adverse effect on any existing or planned runway length.

Determination of No Hazard
Aeronautical Study Number 2002-ANE-0982-OE

The aeronautical study found that the Horseshoe Shoals Wind Turbine Generators would not have an adverse effect or derogation to any airport efficiency.

The aeronautical study found that the Horseshoe Shoals Wind Turbine Generators would not have an adverse effect on any planned IFR and VFR airport operations indicated by plans on file.

The aeronautical study found that the Horseshoe Shoals Wind Turbine Generators would not be located within any airport traffic pattern and would not have an effect on traffic.

Therefore, a **Determination of No Hazard to Air Navigation** is issued.

MARKING AND LIGHTING:

In general, all the wind turbines inside the perimeter will have red lights (L810). On the perimeter, every other wind turbine will also have red lights (L810). Those lights on the perimeter not having red lights will have a dual-medium intensity lighting system. Omission from marking of all wind turbine generators has been approved.

The proponent and the FAA have agreed on a letter-number grid to identify each wind turbine generator. In accordance with the grid, the following aeronautical studies (GRID #) will be lighted with dual-medium intensity lights: 2002-ANE-1002-OE (D1), 2002-ANE-1004-OE (D3), 2002-ANE-1006-OE (D5), 2002-ANE-0995-OE (C7), 2002-ANE-0998-OE (B7), 2002-ANE-0982-OE (A8), 2002-ANE-0984-OE (A10), 2002-ANE-0986-OE (A12), 2002-ANE-0987-OE (A13), 2002-ANE-1001-OE (C13), 2002-ANE-1039-OE (F14), 2002-ANE-1055-OE (G15), 2002-ANE-1082-OE (I15), 2002-ANE-1093-OE (J16), 2002-ANE-1103-OE (K16), 2002-ANE-1111-OE (L14), 2002-ANE-1108-OE (L11), 2002-ANE-1098-OE (K11), 2002-ANE-1080-OE (I12), 2002-ANE-1078-OE (I9), 2002-ANE-1077-OE (I7), 2002-ANE-1088-OE (J6), 2002-ANE-1107-OE (L4), 2002-ANE-1104-OE (L1), 2002-ANE-1083-OE (J1), 2002-ANE-1056-OE (H1), 2002-ANE-1027-OE (F1).

CONSTRUCTION NOTICE AND CHARTING REQUIREMENTS:

A 7460-2, Notice of Actual Construction or Alteration is enclosed. Please complete the form and submit for proper aeronautical charting.

Charting of the wind farm is a very important issue. Therefore, we are requiring notice well in advance of the normal notice required. We are requesting **180 day notice** from the time the construction is approved and ready to begin. This time period will allow for two charting cycles on all aeronautical publications.

Please refer to Aeronautical Study Number 2002-ANE- 0982 -OE in any correspondence.

Monomoy-Handkerchief Shoal
FAA Determination

Federal Aviation Administration
New England Regional Office
12 New England Executive Park-ANE-520
Burlington, MA 01803

Aeronautical Study No.
2002-ANE-1200-OE

Through

Aeronautical Study No.
2002-ANE-1291-OE

Issued Date: 7/21/2003

LEONARD J. FAGAN
CAPE WIND ASSOCIATES, LLC
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02116

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has completed an aeronautical study under the provisions of 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure Type:	Turbine (AAA5)
Location:	NANTUCKET SOUND, MA
Latitude:	41-33-54.21 NAD 83
Longitude:	70-12-44.64
Heights:	426 feet above ground level (AGL)
	426 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure should be marked and/or lighted in accordance with FAA Advisory Circular 70/7460-1 AC 70/7460-1K, Obstruction Marking and Lighting, See Attachment

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or: See Attachment

N/A At least 10 days prior to start of construction
(7460-2, Part I)

N/A Within 5 days after the construction reaches its greatest height
(7460-2, Part II)

As a result of this structure being critical to flight safety, it is required that the FAA be kept appraised as to the status of the project. Failure to respond to periodic FAA inquiries could invalidate this determination.

See attachment for additional condition(s) or information.

This determination expires on 1/21/2005 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed , as required by the FCC, within 6 months of the date of this

determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is subject to review if an interested party files a petition on or before 8/20/2003. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted in triplicate to the Manager, Airspace Branch, Federal Aviation Administration, Washington, D.C. 20591.

This determination becomes final on 8/30/2003 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (781)238-7520. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2002-ANE-1200-OE.

for John R. Donnelly
Manager, Airspace Branch

(DNH) 196018

Determination of No Hazard for
Aeronautical Study Number 2002-ANE-1200-OE
Through
Aeronautical Study Number 2002-ANE-1291-OE

LOCATION:

The Windmill Farm is located approximately 8 nautical miles (NM) southeast of the airport reference point of the Barnstable Municipal-Boardman/Polando Airport (HYA), in Hyannis, MA.

DESCRIPTION OF PROPOSAL:

This proposal is the second of three locations. This project is known as **Handkerchief Shoals**. The proposed project consists of 92 electrical power generating windmills. The farm will be in Nantucket Sound with the center of the farm located at approximately 41° 33' 08" North Latitude, 70° 10' 02" West Longitude.

When the propellers are at their apex, they reach 426 feet Above Mean Sea Level (AMSL).

OBSTRUCTION STANDARDS EXCEEDED:

The preliminary aeronautical study indicates that none of the 92 structures exceeds the Obstruction Standards of Federal Aviation Regulations (FAR) Part 77.

OTHER AERONAUTICAL CONCERNS:

The preliminary aeronautical study indicates that the western edge of the windmill farm underlies a federal airway. All the airspace overlying the windmill farm is designated as uncontrolled airspace below 1,200 feet AMSL.

The New York Sectional Aeronautical Chart, 67th Edition, indicates the Maximum Elevation Figure (MEF) in the area is 700 feet AMSL. This elevation is based on the highest known feature in the quadrants immediately to the north of the windmill farm.

PUBLIC NOTICE COMMENTS:

The aeronautical study was mailed out as a public notice on May 16, 2003, with a closing date of June 22, 2003. No letters containing aeronautical comments were received during the public notice period.

The Flight Standards Division of the FAA has made three comments in relation to this wind farm. First: a request that the wind farm be charted prior to construction. Second: a request that "compression" effect during MVFR weather conditions be considered. Third: that the curiosity and novelty effect on VFR sightseeing aircraft be considered.

Attachment

DISPOSITION OF COMMENTS:

The marking and lighting concerns will be addressed at the end of the determination.

Because the wind farm is not located below Class B nor Class C airspace, VFR and MVFR operations are at the pilots discretion. The pilots must maintain VFR at all times.

For VFR sightseeing aircraft , the curiosity and novelty effect is at the pilots discretion. Pilots not under an Instrument Flight Plan (IFR) must maintain VFR at all times when sightseeing over any natural or manmade structure. Maintaining VFR is also applicable traversing to and from the areas of curiosity, such as the island of Nantucket.

SUMMARY OF EFFECTS:

The aeronautical study found that the proposed Handkerchief Shoals area Wind farm would not have a significant adverse effect on air traffic operations inbound to, outbound from, or enroute through any airport in the Nantucket Sound area under Visual Flight Rules (VFR) conditions.

The aeronautical study found that the proposed Handkerchief Shoals area Wind farm would not have a significant adverse effect on air traffic operations inbound to, outbound from, or enroute through any airport in the Nantucket Sound area under Instrument Flight Rules (IFR) conditions.

The aeronautical study found that the Handkerchief Shoals area Wind farm would not have an adverse effect on any Nantucket Sound area airport's existing or planned runway length.

The aeronautical study found that the Handkerchief Shoals area Wind farm would not have an adverse effect or derogation to any Nantucket Sound area airport efficiency.

The aeronautical study found that the Handkerchief Shoals area Wind farm would not have an adverse effect on planned IFR and VFR Nantucket Sound area airport operations indicated by plans on file.

The aeronautical study found that the Handkerchief Shoals area Wind farm would not be located within any Nantucket Sound area airport traffic pattern and would not have an effect on traffic in the traffic pattern of any airport in the Nantucket Sound area.

Therefore, a **Determination of No Hazard To Air Navigation** is issued.

Attachment

MARKING AND LIGHTING:

In general, all the wind turbines inside the perimeter will have red lights (L810). On the perimeter, every other wind turbine will also have red lights (L810). Those lights on the perimeter not having red lights will have a dual-medium intensity lighting system. Omission from marking of all wind turbine generators has been approved.

The proponent and the FAA have agreed on a letter-number grid to identify each wind turbine generator. In accordance with the grid, the following aeronautical studies (GRID #) will be lighted with dual-medium intensity lights: 2002-ANE-1200-OE (AAA5), 2002-ANE-1201-OE (AAA6), 2002-ANE-1203-OE (AAA8), 2002-ANE-1205-OE (AAA10), 2002-ANE-1207-OE (AAA12), 2002-ANE-1209-OE (AAA14), 2002-ANE-1211-OE (AAA16), 2002-ANE-1213-OE (AAA18), 2002-ANE-1215-OE (AAA20), 2002-ANE-1216-OE (BBB4), 2002-ANE-1230-OE (BBB18), 2002-ANE-1243-OE (CCC16), 2002-ANE-1244-OE (DDD3), 2002-ANE-1255-OE (DDD14), 2002-ANE-1265-OE (EEE12), 2002-ANE-1266-OE (FFF3), 2002-ANE-1273-OE (FFF10), 2002-ANE-1274-OE (GGG2), 2002-ANE-1280-OE (GGG8), 2002-ANE-1285-OE (HHH6), 2002-ANE-1286-OE (III1), 2002-ANE-1289-OE (III4), 2002-ANE-1290-OE (JJJ1), 2002-ANE-11291-OE (JJJ2).

CONSTRUCTION NOTICE AND CHARTING REQUIREMENTS:

A 7460-2, Notice of Actual Construction or Alteration is enclosed. Please complete the form and submit for proper aeronautical charting.

Charting of the wind farm is a very important issue. Therefore, we are requiring notice well in advance of the normal notice required. We are requesting **180 day notice** from the time the construction is approved and ready to begin. This time period will allow for two charting cycles on all aeronautical publications.

Please refer to Aeronautical Study Number 2002-ANE- 1200 -OE in any correspondence.

Attachment

Tuckernuck Shoal
FAA Determination

Federal Aviation Administration
New England Regional Office
12 New England Executive Park-ANE-520
Burlington, MA 01803

Aeronautical Study No.
2002-ANE-1300-OE
Through
2002-ANE-1429-OE

Issued Date: 8/5/2003

LEONARD J. FAGAN
CAPE WIND ASSOCIATES, LLC
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02116

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has completed an aeronautical study under the provisions of 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure Type:	Wind Turbine
Location:	NANTUCKET SOUND, MA
Latitude:	41-23-59.91 NAD 83
Longitude:	70-22-10.49
Heights:	426 feet above ground level (AGL)
	426 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure should be marked and/or lighted in accordance with FAA Advisory Circular 70/7460-1 AC 70/7460-1K, Obstruction Marking and Lighting, See attachment

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or: See attachment

N/A At least 10 days prior to start of construction
(7460-2, Part I)

N/A Within 5 days after the construction reaches its greatest height
(7460-2, Part II)

As a result of this structure being critical to flight safety, it is required that the FAA be kept appraised as to the status of the project. Failure to respond to periodic FAA inquiries could invalidate this determination.

See attachment for additional condition(s) or information.

This determination expires on 2/5/2005 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed , as required by the FCC, within 6 months of the date of this

determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is subject to review if an interested party files a petition on or before 9/4/2003. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted in triplicate to the Manager, Airspace Branch, Federal Aviation Administration, Washington, D.C. 20591.

This determination becomes final on 9/14/2003 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (781)238-7520. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2002-ANE-1300-OE.

for

John R. Donnelly
Manager, Airspace Branch

(DNH) 200604

Aeronautical Study Number 2002-ANE-1300-OE
Through
Aeronautical Study Number 2002-ANE-1429-OE

LOCATION:

This Wind Turbine Generator Farm is located approximately 11 nautical miles (NM) northeast of the airport reference point of the Katama Airpark (1B2), in Marthas Vineyard, MA. Marthas Vineyard Airport is located approximately 14 NM southwest of the approximate center of this wind farm. Nantucket Memorial Airport (ACK) is located approximately 14.7 NM southeast of the center of this wind farm.

DESCRIPTION OF PROPOSAL:

This proposal is the third and last of three locations. This project is known as **Tuckernuck Shoals**. The proposed project consists of 130 electrical power generating wind turbines. The farm will be in Nantucket Sound with the center of the farm located at approximately 41° 24' 57" North Latitude, 70° 18' 13" West Longitude.

When the propellers are at their apex, they reach 426 feet Above Mean Sea Level (AMSL).

OBSTRUCTION STANDARDS EXCEEDED:

The preliminary aeronautical study indicates that none of the 130 structures exceeds the Obstruction Standards of Federal Aviation Regulations (FAR) Part 77.

OTHER AERONAUTICAL CONCERNS:

The preliminary aeronautical study indicates that no part of the wind turbine farm underlies a federal airway. The entire windmill farm lies in airspace which is designated as uncontrolled airspace below 1,200 feet AMSL.

The New York Sectional Aeronautical Chart, 66th Edition (picture enclosed), indicates the Maximum Elevation Figure (MEF) in the area is 600 feet AMSL. This elevation is based on the highest known feature in the quadrant .

PUBLIC NOTICE COMMENTS:

The aeronautical study was mailed out as a public notice on June 6, 2003, with a closing date of July 13, 2003. One letter containing aeronautical comments was received during the public notice period.

Attachment

The following is a summary of comments received:

The Nantucket Memorial Airport Commission objects due to their height and airspace penetration. They are also concerned with the concentration of infrangible objects in the middle of Nantucket Sound, visual pollution with the objects being lighted, and a Search and Rescue (SAR) issue.

The Flight Standards Division of the FAA offered the following comments:

1. The wind turbine farm, if approved, must be charted prior to construction.

2. The "compression" effect during MVFR weather conditions on the tracks and altitudes of inter-island VFR traffic should be considered.

3. The curiosity and novelty effect on VFR sightseeing aircraft should be considered.

DISPOSITION OF COMMENTS:

The issue of water SAR is being addressed by the Corps of Engineers as a separate issue. The FAA discusses frangibility as an on-airport concern. None of the 130 wind turbines exceed any obstruction standards of Federal Aviation Regulations (FAR) Part 77. The lighting concerns will be addressed at the end of this determination.

Because the wind turbine farm is not located below Class B nor Class C airspace, VFR and MVFR operations are at the pilots discretion. The pilots must maintain VFR at all times.

For VFR sightseeing aircraft , the curiosity and novelty effect is at the pilots discretion. Pilots not under an Instrument Flight Plan (IFR) must maintain VFR at all times when sightseeing over any natural or manmade structure. Maintaining VFR is also applicable traversing to and from the areas of curiosity, such as the island of Nantucket.

SUMMARY OF EFFECTS:

The aeronautical study found that the proposed Tuckernuck Shoals area wind turbine farm would not have a significant adverse effect on air traffic operations inbound to, outbound from, or enroute through any airport in the Nantucket Sound area under Visual Flight Rules (VFR) conditions.

The aeronautical study found that the proposed Tuckernuck Shoals area wind turbine farm would not have a significant adverse effect on air traffic operations inbound to, outbound from, or enroute through any airport in the Nantucket Sound area under Instrument Flight Rules (IFR) conditions.

The aeronautical study found that the Tuckernuck Shoals area wind turbine farm would not have an adverse effect on any Nantucket Sound area airport's existing or planned runway length.

The aeronautical study found that the Tuckernuck Shoals area wind turbine farm would not have an adverse effect or derogation to any Nantucket Sound area airport's efficiency.

The aeronautical study found that the Tuckernuck Shoals area wind turbine farm would not have an adverse effect on planned IFR and VFR Nantucket Sound area airport operations indicated by plans on file.

The aeronautical study found that the Tuckernuck Shoals area wind turbine farm would not be located within any Nantucket Sound area airport traffic pattern and would not have an effect on traffic in the traffic pattern of any airport in the Nantucket Sound area.

Therefore, a **Determination of No Hazard To Air Navigation** is issued.

MARKING AND LIGHTING:

In general, all the wind turbines inside the perimeter will have red lights (L810). On the perimeter, every other wind turbine will also have red lights (L810). Those lights on the perimeter not having red lights will have a dual-medium intensity lighting system. Omission from marking of all wind turbine generators has been approved.

The proponent and the FAA have agreed on a letter-number grid to identify each wind turbine generator. In accordance with the grid, the following aeronautical studies (GRID #) will be lighted with dual-medium intensity lights: 2002-ANE-1300-OE (AA8), 2002-ANE-1301-OE (AA9), 2002-ANE-1302-OE (BB1), 2002-ANE-1304-OE (BB3), 2002-ANE-1306-OE (BB5), 2002-ANE-1308-OE (BB7), 2002-ANE-1310-OE (BB9), 2002-ANE-1320-OE (DD1), 2002-ANE-1327-OE (DD9), 2002-ANE-1335-OE (FF1), 2002-ANE-1343-OE (FF9), 2002-ANE-1253-OE (GG10), 2002-ANE-1354-OE (HH1), 2002-ANE-1363-OE (HH10), 2002-ANE-1364-OE (II1), 2002-ANE-1374-OE (JJ2), 2002-ANE-1382-OE (JJ10), 2002-ANE-1383-OE (KK4), 2002-ANE-1389-OE (KK12), 2002-ANE-1390-OE (LL5), 2002-ANE-1397-OE (LL14), 2002-ANE-1399-OE (LL16), 2002-ANE-1400-OE (MM7), 2002-ANE-1408-OE (NN8), 2002-ANE-1416-OE (NN16), 2002-ANE-1417-OE (OO10), 2002-ANE-1424-OE (PP11), 2002-ANE-1426-OE (PP13), 2002-ANE-1429-OE (PP16).

Attachment

CONSTRUCTION NOTICE AND CHARTING REQUIREMENTS:

A 7460-2, Notice of Actual Construction or Alteration is enclosed. Please complete the form and submit for proper aeronautical charting.

Charting of the wind turbine farm is a very important issue. Therefore, we are requiring notice well in advance of the normal notice required. We are requesting **180 day notice** from the time the construction is approved and ready to begin. This time period will allow for two charting cycles on all aeronautical publications.

Please refer to Aeronautical Study Number 2002-ANE- 1300 -OE in any correspondence.

Attachment

South of Tuckernuck
FAA Determination (1 of 130
Identical Determinations)

Federal Aviation Administration
New England Regional Office
12 New England Executive Park-ANE-520
Burlington, MA 01803

Aeronautical Study No.
2004-ANE-330-OE

Issued Date: 5/17/2004

Terry Orr
Cape Wind Associates, LLC.
75 Arlington Street, Suite 704
Boston, MA 02116

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has completed an aeronautical study under the provisions of 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure Type:	WIND TURBINE (H14)
Location:	Nantucket Sound, MA
Latitude:	41-13-13.93 NAD 83
Longitude:	70-19-30.35
Heights:	417 feet above ground level (AGL)
	417 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure should be marked and/or lighted in accordance with FAA Advisory Circular 70/7460-1 AC 70/7460-1K, Obstruction Marking and Lighting, a med-dual system - Chapters 4,8(M-Dual),&12.

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

_X__ At least 10 days prior to start of construction
(7460-2, Part I)

_X__ Within 5 days after the construction reaches its greatest height
(7460-2, Part II)

As a result of this structure being critical to flight safety, it is required that the FAA be kept appraised as to the status of the project. Failure to respond to periodic FAA inquiries could invalidate this determination.

See attachment for additional condition(s) or information.

This determination expires on 11/17/2005 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed , as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION

MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (781)238-7525. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2004-ANE-330-OE.

Signature Control No: 376437-277113 (DNE)

Angel Cases
Specialist

Attachment(s)
Additional Information
Case Description

7460-2 Attached

Additional Information for ASN 2004-ANE-330-OE

ELECTROMAGNETIC STANDARDS EXCEEDED:

This Determination of No Hazard To Air Navigation is granted provided the following condition is adhered to:

There is no objection to this wind turbine. However, should spurious electromagnetic noise from the wind turbine or aggregate noise from multiple wind turbines adversely cause Electro-Magnetic Interference (EMI) to an FAA facility, the proponent agrees to cease operations of the wind turbine(s) until such EMI is mitigated"

This determination concerns the effect of the proposal on the safe and efficient use of the navigable airspace by aircraft and does not relieve the sponsor of compliance relating to laws, ordinances, or regulations required by other governmental bodies.

Please refer to Aeronautical Study Number 2004-ANE- 0330 -OE in any correspondence.

Case Description for ASN 2004-ANE-330-OE

One of 130 offshore wind turbines being evaluated as part of Cape Wind alternatives analysis by US Army Corps of Engineers

New Bedford
FAA Determination (1 of 25
Identical Determinations)

Federal Aviation Administration
New England Regional Office
12 New England Executive Park-ANE-520
Burlington, MA 01803

Aeronautical Study No.
2004-ANE-17-OE

Issued Date: 3/26/2004

Len Fagan
Cape Wind Associates, LLC.
75 Arlington Street, Suite 704
Boston, MA 02116

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has completed an aeronautical study under the provisions of 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure Type:	Wind Turbine
Location:	New Bedford, MA
Latitude:	41-31-58 NAD 83
Longitude:	70-53-3
Heights:	417 feet above ground level (AGL)
	417 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure should be marked and/or lighted in accordance with FAA Advisory Circular 70/7460-1 AC 70/7460-1K, Obstruction Marking and Lighting, a med-dual system - Chapters 4,8(M-Dual),&12.

See attachment for additional condition(s) or information.

This determination expires on 9/26/2005 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed , as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

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derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (781)238-7525. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2004-ANE-17-OE.

Signature Control No: 369980-263689 (DNE)

Angel Cases
Specialist

Attachment(s)
Additional Information

ELECTROMAGNETIC STANDARDS EXCEEDED:

This Determination of No Hazard To Air Navigation is granted provided the following condition is adhered to:

There is no objection to this wind turbine. However, should spurious electromagnetic noise from the wind turbine or aggregate noise from multiple wind turbines adversely cause Electro-Magnetic Interference (EMI) to an FAA facility, the proponent agrees to cease operations of the wind turbine(s) until such EMI is mitigated"

This determination concerns the effect of the proposal on the safe and efficient use of the navigable airspace by aircraft and does not relieve the sponsor of compliance relating to laws, ordinances, or regulations required by other governmental bodies.

Please refer to Aeronautical Study Number 2004-ANE- 0017 -OE in any correspondence.